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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,025	11/18/2003	Yoshiaki Ueda	204552030700	3319

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EXAMINER

VAN ROY, TOD THOMAS

ART UNIT	PAPER NUMBER
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2828

DATE MAILED: 04/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

<b>Office Action Summary</b>	<b>Application No.</b> 10/715,025	<b>Applicant(s)</b> UEDA ET AL.	
	<b>Examiner</b> Tod T. Van Roy <i>rv</i>	<b>Art Unit</b> 2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 February 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Drawings***

The drawings were received on 02/03/2006. These drawings are accepted.

### ***Response to Amendment***

The examiner acknowledges the amending of claim 1.

### ***Response to Arguments***

Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 6 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 6 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

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Claim 6 describes the light confinement layer as being a high resistance layer, contrary to the limitation in claim 1 which states the light confinement layer does not function as a current constriction layer. The applicant's specification ([0032-33]) similarly describes the function of the high resistance to be for aiding in current confinement. It is believed that the claim is not enabled, and constitutes an issue of new matter.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 5 is believed to contain problems similar to those of claim 6 rejected above. However, if the examiner is to consider the light confinement layer as acting *alone* to be non-current constricting (i.e., p/n layers together form a current blocking

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effect, but alone they would not function as such), then a reasonable argument could be made with respect to the light confinement layer limitations in both claims 1 and 5.

Claims 1-5, and 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatakoshi et al. (US 6031858) in view of Narui (US 6468820) and further in view of Fukunaga et al. (US 6516016).

With respect to claims 1 and 5, Hatakoshi teaches a semiconductor laser comprising: an active layer (fig.1 #16); a first cladding layer (fig.1 #13) and a second cladding layer (fig.1 #19, p-type) arranged on both sides of the active layer; and a contact layer (fig.1 #21) located on the second cladding layer, wherein part of the second cladding layer and the contact layer constitutes a ridge portion (fig.1 #19 and #21, bottom piece of contact layer is part of ridge structure), and the semiconductor laser device comprising: a light confinement layer (fig.1 #20, n-type), which is provided in a region other than an upper surface of the ridge portion of each of the second cladding layers and has a refractive index different from that of the second cladding layers (different material types so different refractive indices); the light confining layer is sufficiently thin such that it does not function as a current constriction layer (*alone*). Hatakoshi does not teach two lasers to be on the same substrate, or the use of a dielectric film on the light confinement layer. Narui teaches a laser device wherein two lasers are formed on the same substrate (fig.1h), and Fukunaga teaches a laser device wherein a dielectric layer is taught to be used as a current blocking layer (fig.10 #239) surrounding a ridge structure. It would have been obvious to one of ordinary skill in the

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art at the time of the invention to combine the laser device of Hatakoshi with the dual laser design of Narui in order to allow for a higher output power from a given laser device of the same material (more emitters), or the ability to perform multiple functions by utilizing two different materials, and two different wavelengths, as well as the use of the dielectric layer of Fukunaga to cover the tops of the light confinement regions, as this well known current blocking placement along the sides of a ridge structure will allow for improved current confinement into the active region.

With respect to claims 2 and 3, Hatakoshi, Narui, and Fukunaga teach the laser device as outlined in the rejection to claim 1, and further teach that the dielectric film functions as a current constriction, and insulation, layer that flows no current in portions other than the ridge portion (Fukunaga's placement of the current insulating film, as applied to Hatakoshi's device, would inherently allow only for current to flow into the ridge structure).

With respect to claim 4, Hatakoshi, Narui, and Fukunaga teach the laser device as outlined in the rejection to claim 1, but do not teach the current blocking layer to have a thickness not greater than .5um. It would have been obvious to one of ordinary skill in the art at the time of the invention to choose the appropriate thickness of the insulation layer as it has been shown to be non-inventive to discover the optimum or workable range. (see MPEP 2144.05 II A - "Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) ).

With respect to claim 6, Hatakoshi, Narui, and Fukunaga teach the laser device as outlined in the rejection to claim 1 but do not teach the layer to be of a resistance value not less than 100 ohm-cm. It would have been obvious to one of ordinary skill in the art at the time of the invention to adjust the resistance of the light confinement layer to 100 ohm-cm since it has been deemed not inventive to discover the optimum or workable ranges by routine experimentation (see MPEP- 2144.05 II A, In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235(CCPA 1955)).

With respect to claim 7, Hatakoshi, Narui, and Fukunaga teach the laser device as outlined in the rejection to claim 1, and Hatakoshi further teaches the light confinement layer to function as a loss guide that absorbs light from the active layer and confines light in the second cladding layer (col.12 lines 1-44).

With respect to claim 8, Hatakoshi, Narui, and Fukunaga teach the laser device as outlined in the rejection to claim 1, and Hatakoshi further teaches the light confinement layer to be of a thickness not greater than 2um (col.32 lines 64-65, 0.5um).

Claim 9 is rejected for the same reason as claim 1. This claim merely details the methods of forming the device. The method of forming a device is not germane to the patentability of the device itself, therefore these limitations are not given patentable weight. At best this claim could be characterized as product-by-process claim, where the process limitations are not limiting, only the structure implied by the process. See MPEP 2113. Here, the structure implied by the process steps is merely the structure of claim 1.

Claims 1-2, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukunaga et al. (US 6516016) in view of Narui (US 6468820).

With respect to claims 1 and 2-3, Fukunaga teaches a semiconductor laser comprising: an active layer (fig.10 #234); a first cladding layer (fig.10 #232) and a second cladding layer (fig.10 #236, p-type) arranged on both sides of the active layer; and a contact layer (fig.10 #237) located on the second cladding layer, wherein part of the second cladding layer and the contact layer constitutes a ridge portion (fig.10), and the semiconductor laser device comprising: a light confinement layer (fig.10 #235, i-type), which is provided in a region other than an upper surface of the ridge portion of each of the second cladding layers and has a refractive index different from that of the second cladding layers (different material types so different refractive indices); and a dielectric film (insulation film) provided on the light confinement layer (fig.10 #239, device etched down to optical waveguide level on sides of ridge, then insulation film applied); the light confining layer is sufficiently thin such that it does not function as a current constriction layer. Fukunaga does not teach two lasers to be on the same substrate. Narui teaches a laser device wherein two lasers are formed on the same substrate (fig.1h). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the laser device of Fukunaga with the dual laser design of Narui in order to allow for a higher output power from a given laser device of the same material (more emitters), or the ability to perform multiple functions by utilizing two different materials, and two different wavelengths.



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With respect to claim 8, Fukunaga and Narui teach the laser device outlined in the rejection to claim 1 above, and Fukunaga further teaches the light confinement layer to be less than 2um (col.22 line 40, 0.4um).

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tod T. Van Roy whose telephone number is (571)272-8447. The examiner can normally be reached on M-F.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on (571)272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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